

3

Referring now to FIGS. 1-4, dump box 32 includes forward and rearward walls 52 and 54, a back wall 56, an operable front wall 58, and a bottom 60. Dump box 32 is pivotally connected along the front edge of bottom 60 by a hinge 62, with the back edge of bottom 60 resting on frame side member 26. As shown in FIG. 4, a scissors hoist 64 has a lower end connected to the trailer frame 22 and the upper end connected to the dump box bottom 60 adjacent the back edge thereof. Hydraulic cylinder 66 pivots upper and lower legs 64a and 64b of scissors hoist 64 about a pivot pin 68 to expand hoist 64 from a folded retracted position (shown in FIGS. 2 and 3) to an extended dump position (shown in FIG. 4), to selectively pivot dump box 32 on hinge 62.

Front wall 58 is pivotally connected along its upper edge to a support beam 70 extending between the upper front corners of forward and rearward walls 52 and 54 at a hinge 72. An arm 74 is cantilevered outwardly from the center of support beam 70 and has one end of a cylinder 76 pivotally connected thereto. Rod 78 of cylinder 76 is pivotally connected to front wall 58 near the center thereof and is retractable to pivot front wall 58 about hinge 72, as shown in FIGS. 3 and 4, to thereby permit the dumping of the contents of dump box 32.

A column 80 is mounted on the outward face of rearward wall 54 for movement with dump box 32. A similar column 82 is mounted on the outer surface of forward wall 52 diametric to column 80. A generally U-shaped lift arm 84 has one leg 84a pivotally connected to column 80, the opposite leg 84b pivotally connected to column 82, and a base leg 84c connecting the opposite ends of legs 84a and 84b. As shown in FIG. 3, lift arm 84 is pivotable from a lower position shown in broken lines to an upper position shown in solid lines, with base leg 84c moving through an arc outwardly of dump box back wall 56. A cylinder 86 has a lower end pivotally connected at the bottom of column 80 and the extensible rod 88 thereof pivotally connected to lift arm leg 84a. A matching cylinder 86' and associated rod 88' are operably mounted between the lower end of column 82 and lift arm leg 84b. Cylinders 86 and 86' are operable to raise and lower lift arm 84, as shown in FIG. 8.

Lift arm 84 has a fourteen bushel hopper 90 operably connected thereto and serves to raise and lower hopper 90 to dump batches of yard waste from the hopper into dump box 32. As shown in FIGS. 5 and 6, hopper 90 includes a front wall 92, a back wall 94, a bottom 96, and opposing side walls 98 and 100 (side wall 100 being shown in FIG. 3). Hopper 90 is pivotally supported on lift arm 84 by a pair of support brackets 102 attached to the outer surfaces of side walls 98 and 100. A pivot axle 104 pivotally connects brackets 102 to lift arm 84 to pivot hopper 90 about axle 104. A pair of ears 106 are rigidly mounted to legs 84a and 84b and project outwardly from adjacent the base leg 84c thereof. A cylinder 108 is pivotally connected to the distal end of ears 106 with an extensible rod 110 pivotally connected to the back wall 94 of hopper 90. Cylinders 108 are extensible to pivot hopper 90 about axle 104 over the top of dump box 32, to empty the contents of hopper 90 into dump box 32, as shown in FIGS. 5 and 6. Referring once again to FIG. 1, a control panel 112 is mounted on a fender 114 of trailer 12 at a height which permits easy operation by a person either standing by the trailer or sitting atop a riding mower or similar piece of equipment. Control panel 112 includes five actuator levers 116, 118, 120, 122, and 124 operably mounted thereon to control the various cylinders of yard waste handling apparatus 10 as described in more detail hereinbelow. A safety switch 126 is also provided on control panel 112 to selectively engage or disengage an hydraulic pump 128 (shown in FIG. 7).

4

Referring now to FIG. 7, the hydraulic system of the present invention is shown in schematic diagram. A conventional twelve volt deep cycle marine battery 130 will power the hydraulic pump 128 for an entire day. The battery may then be charged overnight and during the day from the vehicle's charging system to operate the yard waste handling apparatus 10. Safety switch 126 interconnects the supply and return lines of hydraulic pump 128 with the hydraulic circuit 132 of the yard waste handling apparatus. Safety switch 126 prevents accidental operation of any of the hydraulic cylinders on the apparatus 10 until switch 126 is activated.

As shown in FIG. 7, the first actuator lever 116 connects the hydraulic lines to cylinder 108 to selectively pivot the hopper 90. Second actuator lever 118 is hydraulically connected to cylinder 86 to selectively raise and lower lift arm 84. Third actuator lever 120 is hydraulically connected to cylinder 66 on scissors hoist 64 to selectively pivot dump box 32 between the storage and dumped positions. Fourth hydraulic lever 122 is connected to cylinder 76 to selectively open and close front wall 58 of dump box 32. Finally, fifth actuator lever 124 is connected to cylinder 44 to selectively raise and lower tailgate 18.

Whereas the invention has been shown and described in connection with the preferred embodiment thereof, many modifications, substitutions and additions may be made which are within the intended broad scope of the appended claims.

We claim:

1. A yard waste handling apparatus, comprising:
  - a wheeled frame means having a frame with forward and rearward ends, and opposing side members;
  - a dump box operably mounted on the forward end of the frame for pivotal movement between a loading position at rest on said frame and a dumping position pivoted relative to said frame;
  - said dump box having an open upper end, opposing forward and rearward walls, opposing front and back walls, and a bottom;
  - said dump box front wall operably connected to the dump box for movement between open and closed positions; and
  - means for selectively pivoting the dump box, connected between the dump box and said frame; and
  - means for selectively moving the dump box front wall, connected between the front wall and dump box.
2. The apparatus of claim 1 wherein said dump box is pivotally mounted along a front edge of the bottom to one of said frame side members.
3. The apparatus of claim 2 wherein said dump box includes a support beam extending between front ends of upper edges of the forward and rearward walls, and wherein the means for moving the front wall is connected between the front wall and support beam.
4. The apparatus of claim 3 wherein said front wall is pivotally mounted along an upper edge to said support beam.
5. The apparatus of claim 4 further comprising a tailgate pivotally connected to said frame rearward end for movement between a generally vertically oriented storage position and a loading position sloped from said frame to a ground surface.
6. The apparatus of claim 5 wherein said tailgate includes a support frame and a rigid sheet extending across the frame to form a surface for loading equipment onto said frame.
7. The apparatus of claim 6 wherein said wheeled frame means includes a flat bed mounted on said frame, extending from the dump box to said frame rearward end.

5

8. The apparatus of claim 7 further comprising means for selectively pivoting the tailgate, connected between the tailgate and said frame rearward end.

9. The apparatus of claim 8 wherein said tailgate is pivotally mounted along a lower edge of the support frame to said frame rearward end.

10. The apparatus of claim 9 further comprising an operable lock mounted on each frame side member at a rearward end for selectively locking the tailgate in the storage position.

11. The apparatus of claim 10 further comprising a hopper, having an open upper end, opposing front and back walls, opposing side walls and a bottom, operably mounted on the dump box for movement between an upright loading position located on the ground proximal said wheeled frame means, and an inverted dumping position located over the upper end of the dump box.

12. The apparatus of claim 11 further comprising means for selectively moving the hopper between the loading position and the dumping position.

13. The apparatus of claim 12 wherein said means for moving the hopper includes:

first means for lifting the hopper vertically from the loading position to a raised position intermediate the loading and dumping positions; and

second means for pivoting the hopper between the raised position and the dumping position;

said first and second means being independently operable.

14. The apparatus of claim 13 wherein the first means for lifting the hopper includes a lift arm pivotally connected at a first end to the dump box, and a second end connected to the hopper, with an operable cylinder connected between the dump box and the lift arm to pivot the lift arm between raised and lowered positions.

15. The apparatus of claim 14 wherein the hopper is pivotally connected to the lift arm second end, and wherein the second means for pivoting the hopper includes an operable cylinder connected between the hopper and the lift arm.

16. The apparatus of claim 1 further comprising a tailgate pivotally connected to said frame rearward end for move-

6

ment between a generally vertically oriented storage position, and a loading position sloped from said frame to a ground surface.

17. The apparatus of claim 16 further comprising means for selectively pivoting the tailgate, connected between the tailgate and said frame rearward end.

18. The apparatus of claim 1 further comprising a hopper, having an open upper end, opposing front and back walls, opposing side walls and a bottom, operably mounted on the dump box for movement between an upright loading position located on the ground proximal said wheeled frame means, and an inverted dumping position located over the upper end of the dump box.

19. The apparatus of claim 18 further comprising means for selectively moving the hopper between the loading position and the dumping position.

20. The apparatus of claim 19 wherein said means for moving the hopper includes:

first means for lifting the hopper vertically from the loading position to a raised position intermediate the loading and dumping positions; and

second means for pivoting the hopper between the raised position and the dumping position;

said first and second means being independently operable.

21. The apparatus of claim 20 wherein the first means for lifting the hopper includes a lift arm pivotally connected at a first end to the dump box, and a second end connected to the hopper, with an operable cylinder connected between the dump box and the lift arm to pivot the lift arm between raised and lowered positions.

22. The apparatus of claim 20 wherein the hopper is pivotally connected to the lift arm second end, and wherein the second means for pivoting the hopper includes an operable cylinder connected between the hopper and the lift arm.

23. The apparatus of claim 1 wherein said wheeled frame means comprises a truck.

24. The apparatus of claim 1 wherein said wheeled frame means comprises a trailer.

\* \* \* \* \*